words, a master of dramatic effects, who, with a sure hand, shaped before their eyes a brilliant texture of knowledge, ending always by laying down a finished carpet on which they might walk with reposeful security towards their own looms. His excellence in teaching the general groundwork of the subject was unique. Backed, as it was, by admirable practical classes, in which the niceties of technical skill required for the collection of evidence were instilled, and a whole field of evidence of a particular type displayed, it provided an educational basis of unsurpassable value. No one acquainted with his work will scent exaggeration in the statement that in this matter he was superb.

Outcome as this excellence was, in part, of unstinted effort and elaborate pains, and of a fully-developed desire to satisfy a genuine ambition for success in such teaching, it was also largely the result of native temperament and talent. A cheerful and courteous man, kindly to the core, generous to a fault. Humble with a knowledge of his own limitations, reverently serving undiscussed ideals, alight with enthusiasm. Of wide sympathy, singularly well-informed, of great culture, and most refined taste. Qualities such as these, and an evident sincerity in his devotion to his subject, necessarily won home to receptive and humane minds.

If at any time his manner caused irritation, then I take it this may be attributed to an excellent and uncommon quality, which was at times of great public service. He was essentially æsthetic, exquisitely sensitive to every light and shade in the inanimate, and in the animate character of his surroundings necessarily seeking harmonies, and as necessarily, therefore, arranging them. Neither inviting admiration nor in any way impelled towards dominance, nevertheless he was always quietly to the front to make certain that the scene was set, the players grouped, and a satisfying *ensemble* produced. Wherever such initiative was welcomed, as often in social matters where it is most rare, he was admirably successful. Arriving in Liverpool in 1891 as the first occupant of the newly endowed Holt Chair of Physiology, the complete sincerity of these qualities enabled him to give invaluable support to those able men who were then watchfully tending the growth of the university spirit within its boundaries. There, with his wife, he gained a great social success without underlying thought other than to give his best, and to obtain the best from others. His accomplished predecessor, citizens of great importance and benevolence, colleagues and students, he turned into grateful friends not of himself alone, but into mutual friends. That he was so signally capable of assisting in an obviously large and progressive movement, the development of university ideals of freedom in thought, in work, and in teaching, within a great and typical centre of commercial industry, must have had a reflected influence on his own character, and given him an added courage and skill in dealing with public affairs.

Leaving Liverpool in 1895 to occupy the Waynflete Chair of Physiology in Oxford, he returned to scenes already familiar. He was frankly pleased with this great and different opportunity; thinking it no small thing that he was entrusted with the banner carried so loftily by his distinguished master, whose influence had been largely responsible for the shaping of his career. If it is right to regard as ambition the desire to win complete recognition in a life-work not chosen from motives of dominance or gain, then it was his ambition which was now completely satisfied. In return for this satisfaction he endeavoured to perform the duties of this post of honour with anxious care and unflagging industry, shirking no responsibility. That he has proved equal to the task is evident from the continued success of the Oxford school of physiology, and from the value and numbers of its alumni who have passed out into, and maintain with credit, positions of great importance.

To his personal friends who have tramped through the mists of Cumberland fells, or wandered through the picture galleries and churches of foreign towns, with a companion so brimful of cheer and interest, or who have heard him tell the tale of his one participation in a cavalry charge in Zululand, or have listened to his renderings of Devonshire songs, his death has brought an intimate sense of loss.

To his wife and family, the centre of so much mutual love and understanding, we can do no more than offer sincere sympathy.

J. S. Macdonald.

NOTES.

Dr. R. von Lendenfeld, professor of zoology and rector of the German University of Prague, who died on July 3, aged fifty-six, had many friends and acquaintances in this country, where he resided for a time. He began his scientific career by travelling in Australia, where he studied chiefly marine sponges and cœlenterates. The results of his investigations were published, partly in English, as "A Monograph of the Australian Sponges," and other papers in the Proceedings of the Linnean Society of New South Wales, and partly in German, as a series of memoirs, entitled "Ueber Cölenteraten der Südsee." After his Australian trip he was for a time assistant in the zoological department at University College, London, and while in England produced, besides other works, his "Monograph of the Horny Sponges," published by the Royal Society, based chiefly upon material collected in Australia. Much of his earlier work was somewhat Haeckelian in the method of treatment, and later investigation has failed to confirm the accuracy of many of his statements, notably the existence of a nervous system in sponges alleged by him. Subsequently he published some works on sponges jointly with Prof. F. E. Schulze, of Berlin, and later, after he obtained the chair of zoology at Czernowitz, he published a monograph of the sponges of the Adriatic in a series of memoirs. When called to Prague he continued to publish, from time to time, systematic monographs upon the sponges collected by various expeditions. In addition to his zoological work he was a keen mountaineer, and contributed articles to various Alpine journals.

THE Dogs (Protection) Bill, which has for several weeks been before a Standing Committee of the House of Commons, but reached a deadlock on July 16, provides that it shall be unlawful to perform any experiment of a nature likely to cause pain or disease, with or without anæsthetics, upon dogs. The Bill would thus prevent, in this country, all experiments on dogs, not only all experiments under anæsthetics, but all inoculations. We may all of us be agreed that a dog has more claim on our regard than a rat or a guinea-pig; but we have to consider whether the Bill, in the long run, would lessen the sum of pain, disease, and death, in the world; and the answer surely is that it would not. Indeed, it would inflict far more than it would avert. For it would hinder in this country the proper and complete investigation, not only of human diseases, but also of canine diseases. Among human diseases, it would hinder the study of diabetes, and perhaps of kala-azar and of cancer. Looking back a few years, we can say that the Bill would have prevented, if it had been in existence, the discovery of the best vaccine against distemper in dogs, and the best treatment of malignant jaundice in dogs. Looking forward, we cannot foresee what the Bill would be preventing; but all experience goes to show that it would be preventing work useful either to man or to dogs. Experiments on dogs in this country are jealously restricted already by the Home Office; and the Bill is a move in the wrong direction. Some useful pamphlets on this subject can be had on application to the Research Defence Society.

MR. L. W. KING, assistant in the Department of Egyptian and Assyrian Antiquities in the British Museum, has been appointed to the post of assistant-keeper in that department.

CAPT. P. J. MARETT has been appointed to a Beit Memorial Research Fellowship to carry on further research as to the nature of the virus of sand-fly fever, a disease which is the cause of much sickness in the ships of the Mediterranean Squadron and among the troops stationed at Malta and in certain parts of India and elsewhere. The Army Council has approved of Capt. Marett, who has already published several papers on the subject, undertaking this research in addition to his military duties at Malta.

THE council of the Royal Society of Arts attended at Buckingham Palace on July 18, when his Royal Highness the Duke of Connaught, president of the society, presented to his Majesty the King, for nine years president and now patron of the society, the society's Albert medal for the present year, "in respectful recognition of his Majesty's untiring efforts to make himself personally acquainted with the social and economical conditions of the various parts of his Dominions, and to promote the progress of arts, manufactures, and commerce in the United Kingdom and throughout the British Empire."

THE Institution of Mechanical Engineers will meet at Cambridge on Tuesday, July 29, and Wednesday, July 30, in the Senate House of the University. The papers to be read and discussed are:—A new method of cooling gas-engines, Prof. Bertram Hopkinson; modern methods of measuring temperature, R. S. Whipple; modern pumping machinery for the drainage of the fens, R. W. Allen; the drainage of the fens, R. F. Grantham; the drainage of the River Ouse basin, E. G. Crocker; modern flour milling machinery, R. B. Creak; and a few notes on engineering research and its coordination, G. H. Roberts.

A SCHEME for the establishment of an Oriental Research Institute in India has been put forward tentatively by the Government of India, with a suggestion that an expression of the views of the provincial Governments be invited. Meanwhile the Royal Anthropological Institute has taken the opportunity of addressing the Secretary of State with a plea for the inclusion of anthropology in the course of studies at the institute. In his reply the Secretary of State observes that he is alive to the importance of anthropological research, and thanks the institute for its offer of cooperation, which is being conveyed to the authorities in India. But he points out that in the present state of the question it would be premature to discuss the exact scope of the proposed Research Institute.

WE understand that excavations in the base-beds of the Red and Coralline Crags of Suffolk have now been proceeding for some months under the direction of Mr. J. Reid Moir. Worked flints of various forms, consisting of the well-known rostro-carinate type, pointed implements for use in the hand, pounders, rubbers, round-ended and other scrapers, borers, hammer-stones, and flakes, affording evidence of a complete sub-Red Crag "industry," have been recovered. Extensive diggings at various sites have brought to light a small but very excellent series of humanly flaked flints, some of which have barnacles of the Red Crag Sea attached to their worked surfaces. With the exception of one small ridged flake, no humanly struck flints have as yet been found beneath the Coralline Crag.

THE KING has recently placed on loan for exhibition at the British Museum a large and valuable collection of gifts received by him from the Dalai Lama of Tibet. It includes a very sacred relic, a royal saddle, said to be 500 years old, and used by the first Dalai Lama who entered Lhasa; a set of Tibetan armour with a steel helmet, the armour being of a type spread over western Asia; a fine sword of the shape still used by the Khambas, the most warlike Tibetan tribe, which was probably made at Derge, and exhibits remarkable handwork. Tibetan Buddhism is represented by seven gilt images of the Seven Gems, which have been fully described by Dr. Waddell in his classical work, "The Buddhism of Tibet," and the Eight Glorious Emblems and Offerings. Among smaller objects is a model of a Chor-ten or shrine, charm-boxes, and a complete costume of a Tibetan lady, the gown of bright colours on a dark purple-brown ground, the boots of green and red cloth, embroidered in green and red.

THE new Natural History Department of the Birmingham Museum and Art Gallery was formally opened on July 17 by Alderman W. H. Bowater (Deputy Lord Mayor), in the absence of the Lord Mayor through illness. The museum, which forms a part of the Council House extension, is situated on the upper floor of the building facing Congreve Street, and comprises four galleries, one of which is not yet opened, having been reserved for the Beale Memorial collection, which is to consist of nesting groups of British birds. The collections, which have been arranged by Mr. W. H. Edwards, contain representatives of most sections of natural history, and though birds, shells, and insects predominate at the present time, the committee hopes now the museum is started that generous donors may be forthcoming to supply some of the deficiencies. An interesting feature is a large case arranged on somewhat original pictorial lines, and illustrating a British marine topographical group. Sea-birds, some with their eggs, are mounted on a large rock, others are shown in flying positions, whilst the lower portion of the case represents a depth of 18 in. of sea-water, in which various fishes, an octopus, cuttle-fish, crabs, lobsters, &c., are shown as in a state of nature amongst seaweeds or resting on the sandy bottom. Special mention must be made of an extremely fine collection of British birds, including many very rare species, arranged in cases with their natural environment, and in various states of plumage. These have been lent by Mr. R. W. Chase, and occupy the whole of one of the galleries.

APHIDES form the subject of the two chief articles in the July issue of *The Journal of Economic Biology*. In the first Prof. F. V. Theobald reviews the British representatives of the genus long known as Siphonophora, or Nectarophora, but for which the author employs the earlier title, Macrosiphum. Inclusive of twelve described as new, the British list comprises fifty-five species. In the second article Mr. T. R. Hewitt records the occurrence of a woolly aphis (*Schizoneura lanigera*) in the core of an apple, and suggests that such infestation may occasionally assist the dissemination of the species.

ACCORDING to the July number of *The Entomologist's Monthly Magazine*, the greater part of the magnificent collection of butterflies and moths (including hundreds of type specimens) formed by the late Mr. Herbert Druce has been acquired by Mr. J. J. Joicey, of The Hill, Witley, Surrey. The representatives of the Lycænidæ and Hesperiidæ have, however, been retained by Mr. Hamilton Druce, and Mr. Druce's first collection of butterflies is now in the Natural History Museum. In communicating this information Mr. Joicey states that his portion of the collection is available for study to entomologists.

IN *Spolia Zeylanica* for June Mr. E. E. Green describes, with coloured illustrations, a case of mimicry by spiders of the genus Cœnoptichus of the wingless forms of wasps of the family Mutilidæ, including those of the type genus. The general effect of the resemblance is most striking, the cephalo-thorax of the spiders having the red dorsal surface characteristic of many of the wasps, while in both groups the abdomen is conspicuously spotted with white or yellow. The spiders belong to one species, but mimic the whole group of wasps, and not any particular kind, protection being doubtless the object of the resemblance. Other Ceylon spiders belonging to the same family (Attidæ) mimic ants.

IN *The Field* of July 12 Mr. Boulenger directs attention to the description by Mr. P. A. Ouwens in the *Bulletin du Jardin Botanique de Buitenzorg* for 1912 of a gigantic monitor lizard from the Isle of Comodo, between Flores and Sumbawa. The type specimen, described as *Varanus komodensis,* measured 7 ft. in length, but a second example is reported to have reached 13 ft., and there are stories of others with a length of from 19 ft. to 23 ft. The species appears to be related to the North Australian *V. giganteus,* which grows to 7 or 8 ft., but it has the muzzle less pointed and brown in colour, while the tail is proportionately shorter. That this giant of its tribe is distinct from all the other living representatives of its genus is certain; but Mr. Boulenger suggests that it may prove to be inseparable from *V. priscus,* of the Pleistocene of Queensland, the vertebræ of which appear to indicate a reptile at least as large as the biggest reported individuals of the Comodo monitor.

THE latest publications of the Fisheries Branch of the Department of Agriculture and Technical Instruction for Ireland include a paper by Messrs. E. W. L. Holt and L. W. Byrne, on the fishes of the Irish Atlantic slope. Some species belonging to the families Stomiatidæ, Sternoptychidæ, and Salmonidæ are described and figured. The same part of the report also contains a paper by Mr. C. L. Boulenger on the luminous organs of the stomiatid fish, *Lamprotoxus flagellibarba.* Mr. R. Southern, in a further report, describes a collection of Gephyrean worms from the coasts of Ireland. Twenty-three species in all are recorded, and six of these are described as new to science. Five species are added to those previously known to exist in the British area. The author advances reasons for regarding *Golfingia macintoshii* of Lankester as synonymous with Blainville's *Phascolosoma vulgare,* and *Thalassema lankesteri* of Herdman as synonymous with Müller's *Thalassema gigas.*

PROF. O. SCHMEIL'S "Naturwissenschaftliches Unterrichtswerk" series has enjoyed an extraordinary vogue in Germany, and when recently revising the botanical portion of the series the author found it necessary to omit certain branches of the subject in order to avoid undue extension of the general botanical volume, intending to write a special work on foreign economic plants. This has now appeared as a separate volume by L. Oberwalter, "Ausländische Kultur- und Nutzpflanzen" (Quelle and Meyer, Leipzig, price 2.40 marks), with an introduction by Prof. Schmeil. This book, uniform in plan with the other volumes in Schmeil's well-known series of manuals, is illustrated by fifty-nine figures, and forms an excellent introduction to economic botany.

ONE of the most important and difficult questions in connection with the maintenance of railways in India is the supply of suitable sleepers, and in a recent issue of *The Indian Forester* (vol. xxxix., No. 4) Mr. R. S. Pearson discusses the reasons why the forests of India, covering about 25 per cent. of the country, cannot apparently at present fully meet the demands of the railway engineers, who seem inclined to fall back on iron in default of a supply of suitable wood. On the railways running through the desert tracts, with climate ranging from severe frosts in winter to fierce dry heat in summer, and salt winds laden with sand, iron sleepers have proved unsatisfactory, since all kinds of iron become spongy under such conditions, and wooden sleepers last much longer. With the extension of railways in India the demand for sleepers is increasing, and for lack of suitable native wood large quantities of the Australian hardwoods have been imported during recent years; these answer fairly well in the damp climate of Bengal, but elsewhere have failed owing to inability to resist the attacks of white ants. The best sleeper wood in India and Burma is teak, but this is now used for other purposes, for which a much higher price can be paid, and Indian foresters are devoting considerable attention to the whole question of a suitable timber or timbers, and the equally important matter of suitable treatment to make the wood more resistant and durable.

IN the June number of the Journal of the Board of Agriculture, Dr. Winifred E. Brenchley gives a survey of a season's work on weeds and their relations to the soils of Norfolk. Compared with results of similar work in Bedfordshire and the western counties, a greater number of species was observed in Norfolk, and this is attributed partly to greater diversity of the Norfolk soils (which are of drift origin) and partly to the larger area covered by the investigation. Some of the weeds are proving to have a real association with different types of soil, while others show decided local differences. The relative richness of sand and sandy loams in calcium carbonate is reflected in the flora, such "acid" plants as Rumex and spurrey never being found on these soils. Few species have a decided preference for heavy land, and practically none can be designated as absolutely symptomatic of clay, though a few are certainly characteristic; of these the chief are field foxtail, cut-leaved geranium, hogweed, and corn crowfoot. The occurrence of certain weeds with definite types of crop was also observed.

THE Bulletin of the Philippine Weather Bureau for October, 1912 (recently received), contains particulars of four typhoons in that month, three of which crossed the archipelago. The most noteworthy was one which passed over the Visayas, or central group of islands, on October 15 and 16, and named the Leyte and Cebu typhoon. As the observations from Yap (Western Carolines) gave no indication of its existence it is supposed to have originated rather near the Philippines, probably about long. 132° E., lat. 10° N.; the Manila Observatory was, however, able to give timely warnings of its approach. The Rev. J. Coronas, S.J. (assistant director), states that the storm must be classified as one of prime importance, both on account of the lowness of the barometer in the neighbourhood of the vortex, 707 mm. (27·84 in.), and the consequent violence of the winds (seventy to eighty miles an hour), as well as on account of the torrential rains which caused inundations, more particularly in the south of Leyte and north of Cebu. All towns within a radius of twenty miles from the storm centre describe their losses as incalculable, and several interesting photographs are given showing the destructive effects of the typhoon. The great loss of life in Cebu is partially due to the facts (1) that little attention was paid to the warnings, and (2) that the vortex passed near midnight, whereas in Leyte it passed during the daytime.

The Electrician for July 4 contains a description of a method devised by Mr. G. B. Burnside for sealing metallic conductors, *e.g.* copper into glass directly. The essential feature of the method consists in the repeated immersion of the glass and metal, immediately the fusion in the usual way has been effected, and the glass has cooled to a red heat, into a slightly heated bath of oil or fat for a second or two, the extent of the immersion being increased each time. For currents up to 15 amperes solid conductors may be used, but above that it is advisable to fuse in tubular conductors. The author has experienced no trouble with these joints, and has found that a copper tube capable of carrying 100 amperes fused into glass in this way may be heated to 100° C. without the joint showing any signs of deterioration. The method solves a difficult problem, and obviously has a wide range of applications.

Two recent Memoirs of the College of Science and Engineering, Kyoto Imperial Observatory (vol. iv., Nos. 1, 2), show that the Japanese are prepared to follow up their previous excellent work in connection with geodynamics and latitude variation by some other thorough-going researches. The volume for which Prof. Toshi Shida is mainly responsible, contains an interesting account of preliminary horizontal pendulum experiments conducted at the Kamigamo Geophysical Observatory. The results of these experiments so far confirm the larger value for the effective rigidity of the earth found by Herglotz from the Chandler period of free nutation. This is about twice the value derived from the results of tidal observations and deflections of the plumb-line. Hecker's Potsdam observations have been analysed by Messrs. Shida and Matsuyama for the lunar diurnal term. The results confirm the idea that Hecker's observations, at any rate for one pendulum, were either seriously affected by some local disturbance (*e.g.* pumping in the well) or else represent some abnormal behaviour locally of the earth's crust. Another interesting communication from Prof. Shida is his discussion of volcanic tremors. His attempt to deduce the Chandler period from the time distribution of volcanic eruptions is interesting if not convincing. It gives the value 431·45 days. The z-term in the variation of latitude—or the Kimura term as it is known in this country—comes in naturally for discussion in a Japanese memoir. Prof. Shinzo Shinjo enters into a careful discussion of possible physical explanations, and ascribes it to anomalies in zenithal refraction. In this view he is in agreement with Dr. Frank E. Ross. Without being able to give any accurate numerical result, he suggests that in periodic changes in the refraction may be found in part the explanation of the discrepancy between the values of the aberration constant derived from the solar parallax and that given by Talcott's method. Further work can alone elucidate the point.

Engineering for July 18 gives an account of investigations made by the United States Bureau of Mines on the ignition of mine-gas by glow-lamps. That all types of glow-lamps are not equally liable to cause ignition of explosive gas was known from previous experiments, conducted chiefly in Belgium, France, and Germany. The American investigators come to the following chief conclusions:—The naked carbon filaments of standard types of lamps, burning at rated voltages, will invariably ignite explosive gaseous mixtures. If the gas can reach those filaments without breaking them, or without producing partial combustion within the bulbs, the gas is sure to be ignited. Several, but not all, sizes of standard lamps (carbon and metallic filaments) and of miniature lamps (small lamps for miners) will ignite the gas when smashed while burning at rated voltages; those lamps which do not cause ignition usually, may do so if the broken pieces of the filament produce a short circuit when the lamps are smashed. Reviewing the results, all the lamps tested must be considered unsafe, though some specimens of a class might not cause ignition. Alternating or direct current, and coupling in series or parallel, made little difference.

MESSRS. J. and A. CHURCHILL have nearly ready for publication the seventh edition of "The Microtomist's Vade-Mecum," by A. B. Lee; the sixth edition of the late Prof. J. Campbell Brown's "Practical Chemistry," edited by Dr. Bengough; and the third edition of "A Text-book of Physics," edited bv A. Wilmer Duff.

THE publication of a new series of books, entitled "The Cambridge Technical Series," and edited by Mr. P. Abbott, is being undertaken by the Cambridge University Press. The series will be comprehensive and will include the whole sphere of technical work in the widest sense. Among the subjects arranged for are:—Automobile engineering, electro-technical measurements, chemistry and technology of oils and fats, mining geology, and domestic science.

A COPY of their new list of wireless apparatus and accessories has been sent to us by Messrs. F. Darton and Co., 142 St. John Street, Clerkenwell, London, E.C. This firm has a long-distance installation at work at its factory, and makes a practice of explaining the most efficient methods of using the apparatus supplied to customers. The list is well illustrated, and full particulars of many forms of transmitting and receiving apparatus are supplied.

OUR ASTRONOMICAL COLUMN.

PERIODIC SPECTRUM OF α CANUM VENATICORUM.—Prof. A. Belopolsky publishes in *Astronomische Nachrichten*, No. 4664, the epochs of maximum intensity of the dark line $\lambda = 412{\cdot}993\ \mu\mu$ in the spectrum of α Canum Venaticorum. Fifty hours is stated to be the length of time of the visibility of this line, and the periodicity very near 5·50 days. Other lines become faint at these epochs.

1913	July	24·96	G.M.T.	Aug.	15·96	G.M.T.
	,,	30·46	,,	,,	21·46	,,
	Aug.	4·96	,,	,,	26·96	,,
	,,	10·46	,,	Sept.	1·46	,,
				,,	6·96	,,

STARS HAVING PECULIAR SPECTRA.—The observations carried out by Miss Cannon for the Revised Draper Catalogue have added already ten stars to those known to have bright lines in their spectra, and twenty-four new composite spectra. Details of these are given in Harvard Circular 178. The bright-line stars have spectra belonging to classes ranging between B3 and Oe. The latter shows the bands $\lambda\lambda$4633 and 4688 bright, whilst $H\beta$ is seen bright in the rest, one also showing $H\gamma$ as a bright line. Of the twenty-four stars showing composite spectra only four are included in Burnham's General Catalogue of Double Stars.

In the same circular it is remarked that a photograph of the spectrum of Nova Geminorum No. 2 secured on April 5, 1913, shows only slight changes since November 9, 1912, when the brightest band was at λ4363. Between $\lambda\lambda$4686–5007 the spectrum resembles that of the prevailing type of gaseous nebulæ, but differences occur in other portions of the spectrum.

THE ORIGIN OF THE PLANETS.—In a memoir communicated to the American Academy of Arts and Sciences (vol. xiv., No. 1) Prof. P. Lowell arrives at some interesting conclusions regarding the genesis of the solar system. Inquiring into the causes of a striking commensurability exhibited between the mean motions of adjacent planets some of the deductions he makes are:—(1) The planets grew out of scattered material; (2) each brought the next one into being by the perturbation it induced; (3) Jupiter was the starting point, and is the only one of the planets that could have had a nucleus at the start.

Prof. Lowell enunciates the following law:—"Each planet has formed the next in the series at one of the adjacent commensurable-period points, corresponding to $\frac{1}{2}$, $\frac{2}{5}$, $\frac{1}{3}$, and in one instance $\frac{3}{5}$ of its mean motion, each then displacing the other slightly sunward, thus making of the solar system an articulated whole, an inorganic organism, which not only evolved but evolved in a definite order, the steps of which celestial mechanics enables us to retrace."

On the basis of this law he makes some predictions regarding "the nearest trans-Neptunian planet"; thus it should have a major axis of 47·5 astronomical units, and a mass comparable with Neptune, though probably less.

THE HULL MEETING OF THE MUSEUMS ASSOCIATION.

THE annual conference of the Museums Association was held at Hull last week, under the presidency of Mr. E. Howarth. There was a large attendance, including representatives from abroad, as well as from numerous places in the British Isles.

As his presidential address, Mr. Howarth gave a helpful and suggestive discourse on the scope, function, and development of museums, using the word in its most comprehensive sense. He pointed out that though the universe could not be represented in a museum, yet even the provincial institution was doing work of a national character. It would be foolish to attempt to reproduce the British Museum in every town, but the principles dominating it were applicable to the smallest village museum. Museums should